WOMEN SHELLFISHERS AND FOOD SECURITY PROJECT

Technical Report on Site Based Research in Ghana and The Gambia

PARTICIPATORY LAND-SEASCAPE VISIONING

in Tanbi, Bulock, and Allahein Sites, The Gambia

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Photo Caption: Oyster midden piles in The Gambia, focus group discission and key informant interview.

Photo Credit: World Agroforestry.

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ACRONYMS

FGD	Focus Group Discussion
NAPA	National Adaptation Plan of Action
NGOs	Non-Governmental Organizations
URI	University of Rhode Island
USAID	United States Agency for International Development

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SUMMARY

In The Gambia, communities are highly dependent on their natural resources for survival, contributing to their degradation. A holistic approach is required for communities to look back at how these systems have changed, their status, and envisaged future. In The Gambia, a participatory visioning process was conducted through an approach that conducted 15 focus group discussions in eight communities spread over three sites (Tanbi, Allahein and Bulock). The objective was to build consensus and develop a common land-seascape vision for shellfishing communities towards better ecosystem management.

The study established that farming, fishing, and shell fisheries are the main livelihood activities, with men focusing more on labor-intensive and women on less labor-intensive activities. Activities such as farming and fish harvesting varied in different months across the year. Trend analysis revealed that activities are either expanding, not changing or declining in the studied sites based on underlying reasons such as weather conditions, migration trends, harvesting trends, and regulations. Mangroves were perceived to be expanding due to initiatives by different stakeholders to promote shellfisheries. Generally, the communities observed declining production of food, feed and fiber in the past and envisaged an improvement in the future to meet the growing demands by the community. To achieve that, it is necessary to continue promoting current interventions such as mangrove restoration and rehabilitation of degraded sites for sustainable ecosystem services generation in the future.

The visioning process identified activities such as deforestation and overharvesting of fish resources that need urgent attention. Activities such as mangrove-replanting, increased regulations enforcement, introduction of sustainable fish harvesting and rotational cropping were on the other hand highlighted to aid restoration efforts. This study therefore helped identify pathways for addressing deforestation of mangroves and terrestrial forests, overharvesting of fish resources, and challenges related to land management, for instance by working with key enablers such as extension services, and increased partnership and collaboration with product or market actors.

1. INTRODUCTION

The Gambia is a low-income country that is highly dependent on ecosystems goods and services originating from within the forested landscapes, agricultural land, and coastal biota (Baldeh, 2018). It is also among the countries highly vulnerable to the effects of climate change (Jaiteh and Sarr, 2011) due to its proximity to the ocean. Coastal areas support many households who depend on fishing, shellfishing (including oyster harvesting) and other casual daily activities. The mangrove vegetation, situated around the coastal parts of the country, is the basis for seasonal livelihoods for thousands of households, particularly women in the society, as noted by Crow and Carney (2012). In general, community livelihoods depend on landscape elements for settlements, crop farming activities, livestock rearing, and the mangrove and coastal areas for sources of fish and shellfishing activities as well as tourism related activities to earn daily income. Coastal community livelihoods are therefore much connected to the land-seascape continuum.

The country is experiencing considerable ecosystem degradation driven by human activities and aggravated by climate change effects. The Gambia's National Adaptation Programme of Action (Government of The Gambia, 2007; Sanneh et al., 2014) emphasizes the need to address the effects of sea-level rise and declining rainfall amounts to help communities to become more resilient. Climate change induces sea-level rise (Dia, 2012), which directly affects coastal communities and indirectly affects the adjacent landscapes. For instance, due to sea level rise, saline seawater is being pushed inland, subsequently changing the soil-water chemical composition, resulting in degradation of the mangrove ecosystem (M'koumfida et al., 2018). This will subsequently have impacts on shellfishing activities, affecting women harvesters that are highly reliant on it. In addition, increased saline water intrusion coupled with climate change effects are also affecting livelihood activities such as rice farming and threatening the country's freshwater resources, notably the Gambia River (M'koumfida et al., 2018).

Wetlands are critical habitats for diverse terrestrial and aquatic species and are also important for tourism, recreation, and cultural purposes (Lavorel et al., 2015). Mangrove ecosystems are essential components of wetlands biodiversity and play a key role in climate change mitigation through carbon sequestration (Alongi, 2008; Giri, 2011). Mangrove forests provide unique and important ecosystem goods and services. They are economically and ecologically important and contribute directly to rural livelihoods. The Tanbi Wetlands and other estuaries of the Gambia support shellfisheries mainly conducted by the TRY Oyster Women's Association (Rice et al., 2015).

Responding to the anthropogenic and non-anthropogenic degradation factors needs a vision and solution menu implemented over a long period to ensure its sustainability. Although centralized response action plans (driven by central government) may work, their effectiveness has been challenged in Africa and other developing countries as the institutions driving the process do not have the resources and capacities to reach every community. Contexts and socioeconomic dynamics vary

by location; thus, solution options should consider local realities on the ground as suggested by Frazzetto and Frischknecht (2003). For governments in countries with weak financial capacity, developing and implementing such localized solutions could be very costly. In addition, such countries also suffer from lack of sufficient skilled personnel and the level of ineffectiveness and cost inefficiency for scaling nationwide is high. In spite of these constraints, community-based approaches where decision-making is delegated to communities, and transfer of use rights to communities who can directly benefit are being mainstreamed in the African natural resources management space. Therefore, it is crucial to devise means of designing a collective vision driven by local interests and aspirations and owned by communities who reside in the landscape for the long term. The vision should address and respond to the likely envisaged effects of climatic and non-climatic ecosystem stressors as described above. Community ownership is crucial because projects are often time-bound, and hence, there is a need for the interventions to become mainstream activities within the landscapes. Through increased community involvement and ownership, there is a high chance of project success, sustainability, and cost effectiveness (Oino et al., 2015).

Visioning is imagining, framing, and visualizing the future based on; 1) history, 2) current reality, and 3) emerging and likely priorities and interests. It is about framing into context and promoting what we want to see more, as well as designing strategies for what we want to see less in our landscapes. Broadly, visioning is based on the aspirations of the residents of the landscape and builds a future that can be sustained, recognizing the limitations, challenges, and opportunities existing in the land-seascape. A vision owned by local communities is the most realistic one, and it reflects their societal norms, cultural viewpoints, and social-ecological realities. Developing such visions in a participatory manner has become a vital co-design process to induce the adoption of sustainable practices while reducing the intensity of destructive practices.

The purpose of this study is to present the process of developing a common land-seascape vision to tackle pertinent environmental challenges that communities relying on shellfishing identify as crucial to be addressed. To achieve this, we used a focus group discussion (FGD) approach as the vision must be a consensus among the broader community beyond the individual shellfishing households of concern. Focus group discussions were undertaken in Tanbi, Allahein, and Bulock sites in order to collect data through dialogue and consultations with shellfishers and other communities living close to the mangrove ecosystems and in agricultural landscapes adjacent to it. The discussions focused on assessing the perceptions of shellfishing communities based on their experiences of the state of their landscape concerning agricultural, forestry, and fishery resource trends in the past, and present, as well as future prospects using the landscape visioning tool. The aim is to develop a community-owned vision to improve their land-seascapes and livelihoods that helps them better manage their ecosystems.

2. METHODS

Fifteen focus groups discussions (FGDs) comprised of ten female and five male groups were conducted in eight communities spread across three identified sites (Figure 1) in six administrative districts. The communities were Kamalo and Old Jeshwang in Jeshwang District, Faji Kunda in Serekunda East District, Lamin in Busumbala District, Bulock in Berefet District, Bintang in Foni Bintang Karanai District, Kartong and Berending in Kombo South District. The socio-demographic, biophysical, and economic features of the sites surveyed are summarized in Table 1. Tanbi is typically an urban economy, while Allahein and Bulock are peri-urban to rural. Tanbi constitutes densely populated communities, where the major economic activity is trading.

Figure 1: Selected study sites for data collection in The Gambia.

Tanbi Wetland National Park consists of mangrove forests that front the ocean to the north, the Gambia River to the east, and stretch from Banjul to Mandinary. It covers an area of nearly 6,300 hectares of which mangroves make up 4,800 hectares. It was declared a Ramsar site (The International Convention on Wetlands) in February 2007, and then gazetted as a national park in 2008 (https://rsis.ramsar.org/ris/1657) (Ministry of Fisheries, Water Resources and National Assembly Matters, 2012). The mangroves of Tanbi connect the Atlantic coast with the estuary of the Gambia

River and play crucial ecological functions, including coastal stabilization, fish breeding, recreation, and crop production. A large portion of the Tanbi wetland complex comprises several mangrove species, including the *Alder conocarpus, Avicennia africana, Laguncularia racemosa, Annona glabra,* and the *Rhizophora spp.* The key human activities in and around the park include shellfishing, vegetable gardening, and rice production.

The Allahein River estuary is an area of high ecological importance. It supports communities from The Gambia and southern Senegal, separated by the water body, with crossing points either by boat or on foot during low tide. The communities of Kartong and Berending in The Gambia and others from southern Senegal utilize the oyster and cockle resources for their livelihoods. Kartong and Berending communities are adjacent to the Allahein River estuary located in The West Coast Region of The Gambia. Kartong is about 46 km from Banjul.

The Bulock mangrove area is located in the West Coast Region of The Gambia, approximately 50 – 70 km from Banjul. The communities adjacent to the estuary include Bulock, Sutu Sinjang, Ndemban Chapechum, Besse, Berefet, among others. There are vast areas of mangroves along the Bulock-Berefet stretch, with numerous creeks, which are locally called "*bolongs*." The shallow water are important areas for fishing, while the area adjacent to the mangroves, provide rice farming, vegetable gardening, and firewood collection livelihoods. The Bulock site is composed of farming and shellfishing communities with forested mangrove wetlands and a complex of vegetation types.

Table 1: Demographic, socio-economic, and biophysical features of study districts.

Parameter	Tanbi	Allahein	Bulock
Study communities	Kamalo, Lamin, Faji Kunda (2), Old Jeshwang	Kartong (4), Berending	Bulock (4), Bintang
District	Jeshwang, Serekunda East, Busumbala	Kombo South	Foni Berefet Foni Bintang Karanai

Based on the responses provided by the focus group respondents, qualitative summary attributes were generated to represent change trajectories as increasing (improving), no change, or decreasing (declining). Also using the qualitative details on the change trajectories, we computed proxies for understanding the relative state of the land-seascapes on a scale of 12 attributes based on the ecosystem functions and services the land-seascapes provide to people and animals (Table 2).

Table 2: Attributes of land-seascapes considered for assessing the degradation proxy.

Ecosystem element	Attributes
Production	Crops; livestock; fisheries; agroforestry (Four attributes)
Biodiversity	Aquatic animals; terrestrial animals (Two attributes)
Vegetation	Forests and woodlands; Mangrove (Two attributes)
Soil condition	Soil fertility (One attribute)
Fresh water	Volume; availability and quality (Two attributes)
Settlements	Residential spaces (One attribute)

For all the 12 attributes, communities qualitatively graded them on a trend scale of improving, no change or declining (degrading). For each FGD group, the number of declining or degrading was counted and divided by the total number of attributes (i.e., 12 attributes). An overall site score was then calculated summing the number of attributes ranked as degrading per community focus group and dividing by the number of focus groups, times 12 attributes. The value was used as a degradation proxy, representing a synthesized community perception of land-seascape degradation for each site. In the computation, 'no change' and 'improving' are considered as no sign of degradation.

3. FINDINGS

3.1 Typologies of livelihood activities in the land-seascape

Across the three sites, shellfishing, gardening (crop farming), and small-scale trading were cited as the major livelihood activities by women, while men were primarily engaged in sea fishing, crop farming, and construction activities (labor). It is also notable that most of the population engages in more than one livelihood activity, with gardening cited in all sites. Other activities cited included trading, salt mining, construction, firewood sales, mangroves productions, shellfish processing, and sale of shellfish.

There is some gender differentiation regarding livelihoods conducted by men and women. Both men and women engage in farming, fishing, and shellfishing activities. However, men were more involved in specialized crafts such as construction, while women were more engaged in less labor-intensive activities such as salt mining (Table 3).

Table 3: Main livelihood activities by men and women across the communities within each project site.

Livelihood activities	Tanbi					Allahein				Bulock				
	Ka	FK12	FK17	FK18	OJ	K6	K11	K15	K16	Be	B8	B9	B13	Bi
Men														
Fishing activities		■	■						■					
Construction		■	■						■					
Farming			■						■			■		
Collection of shellfish, (oysters, crabs, etc.)													■	
Women														
Trading					■			■						■
Collection of shellfish, (oysters, crabs, etc.)	■	■			■			■		■	■			■
Farming					■		■	■		■	■		■	■
Oyster processing/ production					■		■							
Salt mining										■				
Fishing activities						■		■					■	
Forests / Mangrove production						■	■							

Note: B8- Bulock (8), B9 - Bulock (9), B13 - Bulock (13), Bi - Bintang, K - Kamalo, FK12- Faji kunda (12), FK17 - Faji kunda (17), FK18 - Faji kunda (18), OJ - Old Jeshwang, K6 - Kartong (6), K11- Kartong (11), K15 - Kartong (15), K16 - Kartong (16), Be - Berending. Place names with numbers in parenthesis in tables are a random unique identifier of the FGDs to distinguish them from one another.

3.2 The temporal aspects of livelihoods in the land-seascapes

In the studied sites, fishing, gardening and crop farming, and shellfishing were the most dominant activities in the communities. These included activities such as oyster and crab harvesting and fish selling. Areas such as Bulock, where the communities have a community level regulation on oyster harvesting between April, May, and June. Home gardening and crop farming were the main activities when no oyster harvesting took place. In Kamalo, women substituted their income through working as house helps in months when no oyster harvesting took place. Gardening activities included weeding, plowing, vegetable gardening, rice growing and harvesting, and land clearing. Secondary activities also varied across the communities to include construction, wild fruit harvesting, trading, and transportation. These are summarized in Tables 4, 5, and 6 below.

Table 4: Livelihood activities during the year in the Tanbi site.

Month	Kamalo	Faji Kunda (12)	Faji Kunda (17)	Faji Kunda (18)
January	House cleaner (house help)		Construction labor, Harvesting rice, Fishing, Palm wine tapping	Gardening, Fishing, Trading
February	House-help	Gardening, Fishing, Trading	Fishing (1), Farming Construction labor	Gardening, Fishing, Trading
March	House-help	Gardening, Fishing, Trading	Fishing (1), Farming Construction labor	Gardening, Fishing, Trading
April	Oyster harvesting	Oyster harvesting, Processing and selling	Oyster harvesting, Fishing, Trading	Oyster harvesting, Processing and selling
May	Oyster harvesting	Oyster harvesting, processing, selling oyster	Oyster harvesting, Fishing, Trading	Oyster harvesting, Processing and selling
June	Oyster harvesting	Farming (Clearing land, plowing)	Farming (Clearing land, plowing)	Farming (Clearing land, plowing)
July	House-help	Farming, Fishing, Trading	Farming, Fishing, Trading	Farming activities, casual labor
August	House-help	Farming, Fishing, Trading	Farming, Fishing Trading	Farming (Weeding, plowing)
September	House-help	Farming (Land clearing plowing)	Construction (labor), Fishing, Trading	Crop harvesting, Processing, Transportation
October	House-help	Crop harvesting, Processing, Transportation	Crop harvesting, Processing, Transportation	Crop harvesting, Processing, Transportation
November	House-help	Crop harvesting, Processing, Transportation	Crop harvesting, Processing, Transportation	Gardening, Fishing Trading
December	House-help	Gardening, Fishing Trading	Crop harvesting, Fishing, Construction labor	Gardening, Fishing Trading

Note: An activity listed first is a primary activity at the specific month referred to. Trading refers to small businesses operated at an individual level and not as large as a conventional trade. Gardening and farming are often used synonymously though the difference is only where the activities occur. Gardening happens close to home while farming includes crop cultivation that happens at a distance from the family home. Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

Table 5: Livelihood activities during the year in the Allahein site.

Month	Kartong (1)	Kartong (2)	Kartong (3)	Kartong (4)	Berending
January	Fish selling, Gardening		Gardening, Trading, Fishing	Gardening, Fishing, Trading	
February	Fish selling, Gardening		Gardening, Fishing Trading	Gardening, Fishing, Trading	
March	Fish selling, Gardening		Vegetable Gardening, Trading, Crab harvesting	Gardening, Fishing, Trading	Gardening Fishing Trading
April	Oyster harvesting, Fish selling, Wild fruits collection	Oyster harvesting	Oyster harvesting, Crab harvesting and Trading	Oyster harvesting, Fishing, Trading	Oyster harvesting, Fishing, Trading
May	Oyster harvesting, Fish selling, Wild fruits collection	Oyster harvesting	Oyster harvesting, Crab harvesting, Trading	Oyster harvesting, Trading, Fishing	
June	Oyster harvesting, Fish selling	Oyster harvesting	Farm activities (Land clearing)	Farm activities, Fishing, Trading	
July	Fish selling, Wild fruits collection	Gardening	Farm activities (Plowing), Trading Crab harvesting	Farm activities, Fishing	
August	Fish selling, Wild fruits collection	Gardening	Rice cultivation, Farm works, Trading	Farm activities, Crab harvesting, Trading	
September	Fish selling, Gardening	Gardening	Crab harvesting, Trading, Weeding	Farm activities, Fishing Trading	
October	Fish selling, Gardening		Harvesting rice, Transporting rice from the field, Processing	Oyster harvesting, Trading, Fishing	
November	Fish selling, Gardening		Gardening, Fishing Trading	Oyster harvesting, Trading, Fishing	
December	Fish selling, Gardening		Vegetable Gardening, Fishing, Crab harvesting	Oyster harvesting, Trading	

Note: An activity listed first is a primary activity at the specific month referred to. Trading refers to small artisanal businesses operated at an individual level and are not as large as the commercial scale. Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

Table 6: Livelihood activities during the year in Bulock area.

Month	Bulock (8)	Bulock (9)	Bulock (13)	Bintang
January	Gardening		Gardening, Fishing, Trading	Oyster production; Vegetable gardening; Fishing
February	Gardening		Gardening, Harvesting, Trading	Oyster production; Vegetable gardening; Trading
March	Gardening		Gardening, Fishing Trading	Oyster harvesting; Gardening; Trading
April	Oyster harvesting	Oyster harvesting	Oyster harvesting, processing, trading	Oyster harvesting, Gardening, fishing
May	Oyster harvesting	Oyster harvesting	Oyster harvesting, processing, trading	Farming, Fishing Trading
June	Oyster harvesting	Farming, Livestock rearing	Farming (Land clearing, Plowing, Cultivation)	Oyster harvesting, Farming (clearing lands), Fishing
July	Farming	Farming, Livestock rearing	Farming (Harvesting, Transporting farm products, Processing)	Farming (Plowing, sowing seeds), Fishing
August	Farming	Farming, Livestock rearing	Gardening, Fishing Trading	Weeding farmlands, Trading Applying herbicides
September	Farming	Farming, Livestock rearing	Crop harvesting, Processing, Storage	Crop harvesting, Trading, Fishing
October	Farming	Farming, Livestock rearing	Harvesting, Fishing, Trading	Harvesting, Fishing, Trading
November	Farming		Farming (Weeding, applying herbicides), Fishing	Gardening, Fishing, Trading
December	Gardening (Homestead)		Oyster harvesting, processing, trading	Gardening, Fishing Trading

Note: An activity listed first is a primary activity at the specific month referred to. Trading refers to small businesses operated at an individual level and is not as large as commercial trade. Gardening, agriculture, and crop farming are used synonymously. Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

3.3 Trends in main activities over the past decade, cause of change, and future plans

The trends for each of the main livelihood activities reported by respondents across the sites and communities is shown in Table 6. Trends for each activity were recorded, with some activities expanding, not changing, or declining for various underlying reasons. To illustrate, farming was affected by animal invasion, migration trends, changes in soil fertility, and weather patterns. On the other hand, fishing activities were affected by overfishing and inappropriate regulations to control fishing practices. Each community's plan or vision over the next ten years for each activity to meet the growing demands and earn a living are shown in Table 7.

There is a general perception by the communities that livelihood activities have been degrading or declining in the last ten years. The causes of change are varied in different landscapes, with factors such as roaming animals, deforestation, pests and diseases, and overharvesting of the natural resources being cited as the major threats. In particular, residential spaces were noted to be shrinking due to urbanization, population growth, and overcrowding/congestion in the urban areas. This also contributed to increased waste generation and landscape degradation, impacting biodiversity, vegetation, and freshwater across the three sites.

Table 7: Participant perceptions of the trends in main activities over the past decade, cause of change, and future plans.

Site	Community	Specific livelihood activities	Trend in the last ten years	Underlying reasons for the observed trends	Plans for the next ten years	Reasons for proposed changes
Tanbi	Kamalo	Shellfishing	Expanding	It is expanding because it is profitable and easily doable.	Maintain as it is	The resources cannot suffice the stress of the multiplied number of harvesters
	Faji Kunda (12)	Fishing, oyster harvesting, crop farming	No change	Lack of innovation, no strict rules on how to fish, harvest oyster and grow crops	Expand	Expanding is needed as it creates employment opportunities and provides human nutrition
	Faji Kunda (17)	Oyster processing and transportation	Declining	Low capital	Expand	If done well, it has a high income rate as it adds more value to the oysters.
	Faji Kunda (18)	Fishing, oyster production, oyster selling	Expanding	Overharvesting	Decrease	Overharvesting
Allahein	Kartong (6)	Fish selling	Expanding	More fishers and fish mill businesses expanding	Decrease	The fish mill is catching all the little fish, and the community will not get fish in the end
	Kartong (11)	Oyster harvesting	Expanding	Planting of mangroves	Expand	Introduction of oyster aquaculture
		Gardening	Expanding	Usage of fertilizer	Decrease	Livestock damage the crops
	Kartong (15)	Farming, fishing, oyster farming, trading	Expanding	Supplement of quality farm products, supplying sufficient food	Expand	It is necessary to expand the activities to supply sufficient farm products such as fish, oyster, crop

Site	Community	Specific livelihood activities	Trend in the last ten years	Underlying reasons for the observed trends	Plans for the next ten years	Reasons for proposed changes
	Kartong (16)	Farming	Expanding	High rainfall, low migration	Expand	Mechanization, give loans to farmers
	Berending	Gardening	Expanding	More farmers engaging in the activity	Decrease	Pest and diseases may pose a serious challenge.
		Oyster harvesting	Declining	Overharvesting	Expand	Awareness creation about the dangers of overharvesting
Bulock	Bulock (8)	Oyster production	Expanding	More harvesters	Maintain as it is	Sustainability
	Bulock (9)	Farming	Expanding	More farmers now	Expand	More mouths to feed
	Bulock (13)	Farming	Expanding	Low migration or moving away of people	Expand	Commercialization of agriculture may improve the farming qualities and income.
	Bintang	Livestock rearing	Expanding	Increasing number of livestock	Expand	High quality production of livestock generates income and other food benefits.
		Oyster production	Expanding	More harvesters	Maintain as it is	Sustainability
		Gardening	Declining	Animal Destruction	Expand	Provision of quality vegetables
		Fishing	Declining	Overharvesting	Expand	Higher quantity and quality fish production, protein supply for households

Note: Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

3.4 Understanding the state of the land-seascape from the communities' perspectives

As defined in the methods section, the state of the land-seascapes was assessed using responses from the FGDs conducted in each group. Over the past 5-10 years, the overall land-seascape degradation is low (overall proxy score of 27 percent) in Bulock and Allahein while the extent in Tanbi (overall proxy score of 50 percent) is considerable. The degradation perception for Tanbi is almost twice that of Bulock and Allahein. The observed perception is quite understandable when the growing extractive pressure in Tanbi is considered. This perception of the communities aligns well with what other actors in the land-seascape have argued in the past. The designation of Tanbi as one of the Ramsar sites (protected areas recognized globally) might have been driven by the need to reduce the degradation pressures exerted on the land-seascape. The results are summarized in Tables 8, 9, and 10.

Table 8: Participant perceptions of the state of the land-seascape in Tanbi site.

Ecosystem elements	Attributes	Kamalo	Lamin	Faji kunda (12)	Faji kunda (17)	Faji kunda (18)	Old Jeshwang
Production	Crop	=	▲	▼	▼	▼	▼
	Livestock	=	▲	▼	▼	▼	▼
	Fishery	▼	▼	▲	▼	▼	▲
	Agroforestry	=	▲	=	=	▼	▼
Biodiversity	Aquatic animals	▼	▲	▼	▼	▼	▼
	Terrestrial animals	▼	▲	=	=	▼	▼
Vegetation	Forests and woodlands	=	▲	▼	▼	▼	▼
	Mangrove	▲	▼	▲	▼	▼	▲
Soil condition	Soil fertility	=	▲	▼	▼	▼	▼
Freshwater	Volume	=	▲	=	=	=	=
	Availability and Quality	=	▲	=	=	▼	=
Settlements	Non-Residential spaces	▼	▼	▲	=	▲	▲
Community level degradation proxy		4/12 (33%)	3/12 (25%)	5/12 (42%)	7/12 (58%)	10/12 (83%)	7/12 (58%)
Overall Land-seascape degradation proxy for the site							50%

Note: Agroforestry in many areas was emphasized to include commodity plantations. The color codes indicate the following: yellow – no change (=); red – declining(▼); green – improving(▲). Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

Table 9: Participant perceptions of the state of the land-seascape in Allahein site.

Ecosystem elements	Attributes	Kartong (6)	Kartong (11)	Kartong (15)	Kartong (16)	Berending
Production	Crop	▲	▼	▲	▲	▼
	Livestock	=	▲	▲	▲	▲
	Fishery	▼	▲	▲	▲	▲
	Agroforestry	▼	▲	▲	▲	▲
Biodiversity	Aquatic animals	▼	▲	▲	▲	▼
	Terrestrial animals	▼	▼	▲	=	▼
Vegetation	Forests and woodlands	▼	▼	▼	▼	▲
	Mangrove	▲	▲	▲	▲	▲
Soil condition	Soil fertility	=	▲	=	▲	▲
Freshwater	Volume	=	▲	▲	▲	▲
	Availability and Quality	=	▲	▲	▲	▲
Settlements	Non-residential spaces	▼	▼	▲	▲	▼
Community level degradation proxy		6/12 (50%)	4/12 (33%)	1/12 (8%)	1/12 (8%)	4/12 (33%)
Overall Land-seascape degradation proxy for the site						27%

Note: Agroforestry in many areas was emphasized to include commodity plantations. The color codes indicate the following: yellow – no change (=); red – declining(▼); green – improving(▲). Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

Table 10: Participant perceptions of the state of the land-seascape in Bulock site.

Ecosystem elements	Attributes	Bulock (8)	Bulock (9)	Bulock (13)	Bintang
Production	Crop	▲	▲	▲	▲
	Livestock	▼	▼	=	▼
	Fishery	=	▲	▲	▲
	Agroforestry	=	▼	▲	=
Biodiversity	Aquatic animals	▼	▼	▲	▼
	Terrestrial animals	▼	▼	▲	▲
Vegetation	Forests and woodlands	▼	▼	▲	▲
	Mangrove	▲	=	▲	▲
Soil condition	Soil fertility	=	=	▲	▲
Freshwater	Volume	=	=	▲	=
	Availability and Quality	=	=	▲	▲
Settlements	Non-Residential spaces	▼	▼	▲	▲
Community level degradation proxy		5/12 (42%)	6/12 (50%)	0 (0%)	2/12 (17%)
Overall Land-seascape degradation proxy for the site					**27%**

Note: Agroforestry in many areas was emphasized to include commodity plantations. The color codes indicate the following: yellow – no change (=); red – declining(▼); green – improving(▲).

3.5 Proposed activity dynamics and management for a better future

Deforestation of both terrestrial vegetation and mangroves was mentioned as the predominant activity to be stopped as soon as possible (Table 11). It shows that the communities are concerned about losing these vegetation types in their land-seascape. Communities emphasized that they rely on this vegetation for their energy and construction needs besides the role of mangroves as critical habitat for oysters. Overharvesting oysters and fish is the second most highlighted activity that needs to be stopped in the land-seascape. In many locations, communities emphasized that harvesters tend to collect any size that they come across without leaving some to mature for the next season. For example, this was observed in the Lamin area in Tanbi, including some parts of Allahein. Intensive land utilization such as continuous farming of plots should also be stopped as it degrades land productivity. In terms of the activities to be eliminated from the land-seascape, it is evident that the broader community has a strong awareness about the environmental consequences of removing trees, forests, and mangroves from the land-seascape. This contradicts the general perception by development actors that lack of awareness is the main problem aggravating forest cover loss.

Table 11: Overview of change trajectories envisaged across sites.

Site	Eliminate/stop	Expand	Introduce
Tanbi	Overharvesting of aquatic resources; Deforestation; Continuous cropping	Oyster aquaculture; Reforestation; Afforestation and shifting cultivation: mangrove afforestation; Shifting cultivation (fallow farming)	Mangrove planting; Seasonal harvesting; Crab harvesting; Gardening (Homestead); Nurturing oyster; Regulated harvesting; Fallow farming
Allahein	The use of smaller nets for fishing; Deforestation, overharvesting of oysters and fish	Wild fruit collection; Reforestation; Shifting cultivation (fallow farming)	Livestock rearing with improved facilities; Oyster aquaculture with sustainable harvests; Sensitizations on sustainable harvest.
Bulock	Deforestation Overharvesting both oyster and fish	Reforestation; Mangrove planting; Overharvesting management; Gardening; Afforestation	Animal husbandry; Beekeeping; Shifting cultivation (Fallow farming); Oyster aquaculture with sustainable harvests

Note: Bush fallow is the same as shifting cultivation. Gardening is often synonymous with farming.

Replanting deforested areas and mangrove lands is the most emphasized activity to expand throughout the three land-seascapes. This is crucial for the future of the land-seascapes, especially when reliance on trees for food, fiber, and energy is remarkably high. Overharvesting regulation is the second most important activity that should be promoted to improve fish and shellfish sustainability. Overharvesting of juveniles for instance, can result in not enough juveniles to grow into mature fish and shellfish for the subsequent harvesting season. Shifting cultivation is another proposed activity to be promoted to maintain the productivity of the available farm areas. The activities the communities want to expand are clear indications of where development assistance agencies, NGOs, and governments should prioritize development support. The practices they want to expand are the ones they feel could make their land-seascapes better.

Sustainable harvest of shellfish (especially oysters) is among the community's topmost mentioned activities in their respective areas. Another concern of communities is the use of nets which results in overharvesting shellfish. Also to be noted is that juvenile oysters are often harvested and consumed when harvesting happens outside the harvesting season. Apart from the harvest related issues, introducing shifting cultivation (fallow farming) gained much attention among the communities. They want to adopt rotational cropping where they leave the land to fallow for one or more seasons to

regain its fertility. However, the community also emphasized small farm size issues they have in areas around Tanbi in particular. In some areas, mangrove planting has not been done and communities listed this as one of the activities to introduce, e.g., in the Faji Kunda area. Although not a high priority, in Bulock, the communities also suggested introducing animal husbandry and beekeeping to boost household income.

3.6 Stakeholder organizations and their roles in the land-seascape

Multiple stakeholders are present in the three land-seascapes with different and sometimes overlapping roles and responsibilities (see Table 12).

Table 12: Participants' perceptions of stakeholder types and their roles in the land-seascapes.

Stakeholder	Typology	Engagement activities (roles) in the land-seascape
Fish meal factory	Business	Harvest fish from the nearby water bodies and employ some members of communities, especially in the Allahein area
Local women	Communal groups	Extractive use and some sort of communal mangrove management activities where it is possible
		Harvest, process and marketing of oysters and other shellfish
TRY Oyster Women's Association	community organization (Aid NGO)	Coordinate women and empower them to benefit better and take actions to conserve the mangroves
		Capacity building
Ministry of Fisheries	Government/ public entity	Provision of small boats to enhance the oyster harvest
		Introducing new measures or techniques of oyster harvesting
		Sensitizations, innovating new measures on how to farm of floating areas
		Research and innovate helping farmers
		Funding activities
		Capacity building
		Monitoring production and harvesting
		Provide seeds and fertilizers and farm equipment
NGO	Aid NGOs	Provide different assistance for oyster harvesters
		Provide seeds before the rainy season
		Assisting and helping communities with financial difficulties
		Introducing new measures of farming
		Funding community interventions
Community members	Communal groups	Provide labor (Production, collection and harvesting)
		Help themselves with needed facilities
		Sensitization dialogues
		Cooperation in innovations from all organizations
		Empowering oyster farmers

It is important to note here that these are the ones identified by the communities in the three land-seascapes and their perceived roles in different activities. They range from government agencies, private sector, community groups, and non-government organizations.

3.7 Mangroves as critical vegetation in the land-seascapes: community perspectives

There was a general feeling that mangroves are expanding in most sites and communities, except for Berending and Faji Kunda (17), where they are declining. Communities in Bulock (9) and Allahein (6) felt no major change in the mangrove extent. In terms of mangrove health, only two out of 15 focus groups reported that mangroves in their area are unhealthy. The rest of the communities felt mangroves in their area are healthy. Generally, there exists a direct relationship between mangroves and shellfish. These results are summarized in Table 13.

Table 13: Community perceived trends in mangrove forest cover, health and relationship with shellfishing in Tanbi, Allahein and Bulock communities.

Tanbi	**Kamalo**	**Lamin**	**Faji kunda (12)**	**Faji kunda (17)**	**Faji kunda (18)**	**Old Jeshwang**
Trend of mangrove forest	Expanding	Expanding	Expanding	Declining	Expanding	Expanding
Current mangrove health condition	Healthy	Healthy	Healthy	Healthy	Healthy	Unhealthy
Relation between mangrove and shellfish	Yes	Yes	Yes	Yes	Yes	Yes
Allahein	**Kartong (6)**	**Kartong (11)**	**Kartong (15)**	**Kartong (16)**	**Berending**	
Trend of mangrove forest	No change	Expanding	Expanding	Expanding	Declining	
Current mangrove health condition	Healthy	Healthy	Healthy	Healthy	Healthy	
Relation between mangrove and shellfish	Yes	Yes	Yes	Yes	Yes	
Bulock	**Bulock (8)**	**Bulock (9)**	**Bulock (13)**	**Bintang**		
Trend of mangrove forest	Expanding	No change	Expanding	Expanding		
Current mangrove health condition	Healthy	Healthy	Unhealthy	Healthy		
Relation between mangrove and shellfish	Yes	Yes	Yes	Yes		

Note: Place names with numbers in parenthesis are a random unique identifier of the FGDs to distinguish them from one another.

The community perceptions and understanding of the mangrove state align with the results from the geospatial analysis of temporal changes in mangroves done as part of the current project. The results revealed that mangroves in The Gambia are thriving well, in part due to the concerted efforts of communities, aid agencies and intergovernmental organizations that supported such endeavors through project activities.

In all the communities where mangroves currently grow, the respondents agreed that mangroves are important for shellfishing. They explained that mangroves provide habitat for shellfish (oysters and cockles) to live and reproduce. In the light of this, respondents indicated a willingness to plant more mangroves to realize the associated benefits. Different indicators were ranked differently per community related to the healthiness or unhealthiness of mangroves and are summarized in Table 14 below.

Table 14: Indicators and community perceived attributes of mangrove health status.

Site	Indicators	Description	Healthy mangrove attributes	Unhealthy mangrove attributes
Tanbi	Recruitment of juvenile mangroves	The capacity of the mangrove to regenerate or juvenile ones emerging	High density of juvenile saplings of mangroves	Only old mangrove stems standing
	Color of the mangrove leaves	leaf color is an important indicator of the health of the mangroves.	Leaves look green.	Discoloration of the leaves or high proportion of leaves dead.
	Productivity	Productivity indicates the product produced from a mangrove such as fuelwood, oysters	Better oyster yield and wood production	Poor wood and oyster yield
Allahein	Height of mangroves	The taller the mangroves, the better.	The taller the mangroves the better.	Short and stunted mangroves
	Productivity	The potential of the mangroves to produce various food and fiber products.	Wood biomass and yield of oysters produced	Low wood and oyster yield
	Recruitment of juvenile mangroves	The capacity of the mangrove to regenerate or juvenile ones emerging	High density of juvenile saplings of mangroves	Only old mangrove stems standing
	Plant statue	Leaves and stem forms of mangroves	Broad leaves and firm stem	Thin and small leaves normally indicate poor health.
	Leaf color	Leaf color is an important indicator of tree health e.g., nutrient conditions in the soil, insect and disease attack, etc.	Thick green color leaves	Decolored leaves and small leaves
Bulock	Recruitment of juvenile mangroves	The capacity of the mangrove to regenerate or juvenile ones emerging	High density of juvenile mangroves saplings	Only old mangrove stems standing
	Oyster harvest	Oyster productivity is another indicator as it is a direct activity of the community related to mangroves.	More oysters on mangroves	Fewer oysters attaching to the mangroves.
	Leaf color	Mangroves in good condition have dark to light green color.	Leaves look green, high growth rate	Discoloration of the leaves (yellowish leaves)

4. DISCUSSION: TOWARDS REALIZING THE VISION

4.1 Articulating and understanding the community vision

The level of degradation in the land-seascapes of the project sites highlights the urgency for communities to rethink what to do about the future. They realize changes are occurring at a fast pace and generally in the negative direction, particularly exacerbated by climate change issues. The communities in the land-seascapes are highly dependent on products and services of the ecosystems in their surroundings. Hence, ecosystem-based management should be a top priority to secure the future of the community, especially when other alternative livelihood options are not evident in the short-term beyond crop farming and the fish and oyster harvesting practices. The ultimate goal of the communities is to restore and sustainably manage the land-seascape that is generating the goods and services they need for survival. Figure 2 synthesizes the overall visioning scheme for the three communities, with the major challenges, proposed measures, enablers required, and inputs needed.

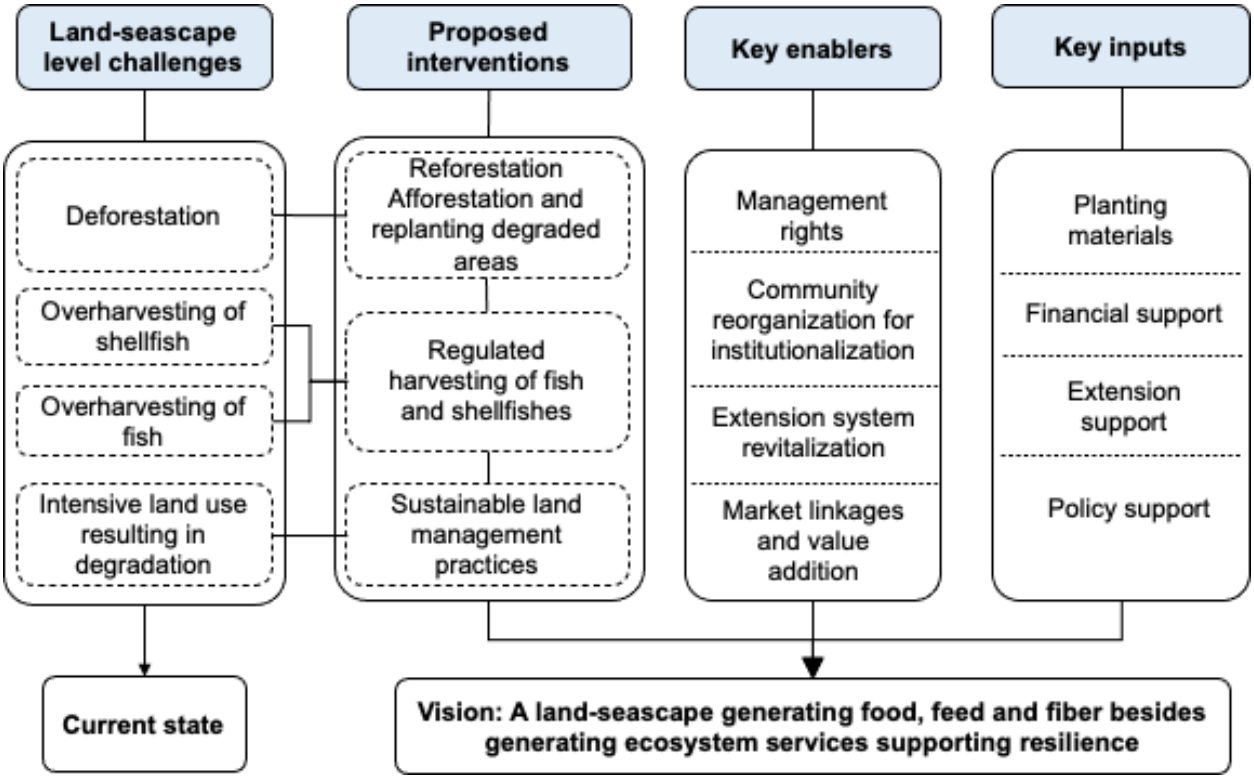

Figure 2: The articulation of a generalized visioning process to achieving land-seascapes that provide the necessary products and services.

4.2. Dealing with the overarching challenges in the land-seascapes

In the current state, the pertinent issues identified through this study in the three land-seascapes are: deforestation (mostly of the terrestrial forests and woodlands), overharvesting of shellfish, unregulated harvesting of fish in the water bodies, and intensive utilization of available farming areas where food production happens. Each of these issues are discussed in the sections below.

4.2.1 Addressing deforestation in the landscapes

Based on the community FDG results and visioning, we highly recommended a key action to address deforestation is the planting and growing of trees in areas where tree cover has been lost. This is crucial as the communities explained, they need the wood from the trees and forests for energy, construction wood, and wood to smoke fish and boil oysters. The clearing of the surrounding forests and woodlands is forcing communities to cut down mangroves for boiling oysters, smoking fish, and even to use some of the larger mangrove tree limbs for construction. However, the use of mangrove wood for construction is very minimal.

This restoration ambition, however, faces several challenges from the community perspective. The 2019-2028 National Forestry Strategy (Baldeh, 2018) points out key challenges of forest restoration such as population pressure accelerating deforestation, illegal logging, agricultural intensification, forest fires, and illegal trade. There is a need to have a collective agreement within the communities to ensure that restoration is everyone's agenda. Collective ownership of the process is also critical to restore the vegetation cover. The main opportunity here is the community forestry framework of The Gambia, which entitles communities to take care of and nurture degraded forests and benefit from it. Currently, the country has more than 150 community managed forests and protected areas managing thousands of hectares of forests (Duguma et al., 2020). The initial step would, thus, be working out how the communities could come together and set up such a scheme to be formally institutionalized and define interventions to restore the lost resources. There are already various nature-based restoration options in The Gambia's community forests that can address deforestation. These include enrichment planting where valuable tree species are introduced in the ecosystem, assisted-natural regeneration to accelerate natural regeneration, and woodlot development in farmlands to supply household level energy and income needs (Muthee et al., 2021). These options are largely low-cost and viable in restoring degraded or deforested mangrove areas.

Community structures alone may not directly lead to a successfully restored forest. For effective restoration it is important to have the right tree for the right place and purpose. There is often a mismatch. For some tree species communities may want to restore their landscapes, seedlings may not be available or may be expensive for local communities to purchase and plant. In other cases, the preferred tree species might have a low survival rate depending on the ecosystems and climatic conditions. Hence, there is always a need for a collaborative approach with donors, NGOs,

community groups such as TRY Oyster Women's Association and local aid agencies supporting communities in such endeavors. Donors should also recognize such locally driven ambitions and visions by communities and support them as appropriately as possible. Project synergies could also be one pathway, i.e., if there are projects focusing on restoration, they could benefit from the vision already built through an in-depth consultation that was undertaken in this project.

Though communities largely emphasized forest and tree resource restoration, there is also a need to maintain and increase the conservation efforts for mangroves. Sporadic diebacks were reported in the Bulock area close to the Gambia River, most likely due to elevated salinity. As highlighted in the National Adaptation Programme of Action (NAPA), the mangrove ecosystem could be highly affected. Hence effective monitoring of mangrove deaths in the coastal areas and immediate replanting where needed is a priority action. Mangrove conservation is, in fact, stated as one of the main means of boosting coastal resilience, especially to coastal erosion because of strong tides and sea level rise.

4.2.2 Addressing overharvesting of oysters and fish

Communities have raised serious concerns about the future of shellfishing activity and the broader fishing activity in their areas. Due to market demand and household consumption needs, some community members tend even to collect immature oysters, directly affecting the sustainability of the oyster harvesting by reducing mature spawning stock biomass. Besides the size concerns, due to weak law enforcement and or even lack of it, some individuals still continue harvesting during official seasonal closures. In selected parts of Tanbi and Allahein, such measures are enforced thanks to the efforts of the TRY Oyster Women's Association, but in other locations, communities are not very much aware of who is responsible for putting in place any measures to regulate harvesting both for oyster and other fish types. In Bulock, where seasonal migrants engage in oyster harvestings, the chances of illegal harvesting practices happening are high, as highlighted by the communities. Under the current management scheme (which is broadly an open (free) access type except in some parts of Tanbi and Allahein where there is organized oyster harvest management), it is difficult to enforce harvest management measures as it could be difficult to control who harvests and who does not. The unsustainable practice is also common in the broader fishing activity as controls are loose. However, if the land-seascape is under community management (as could be possible within the community forestry scheme described above), local community bye laws could be more effective since governments do not have the workforce and resources to reach every corner to enforce rules. For instance, Bintang community forest[1] is located close to the mangrove areas and if the mangroves and

[1] Community forest is a legally recognized forest management scheme in The Gambia in which the respective community takes the management responsivity in a formal arrangement with the government. Part of the agreement is also the sustainable use of the forest. The community forest scheme is supervised by the Department of Forestry.

the community forest are put under the same community management scheme, a land-seascape approach could be piloted.

The issue of unsustainable harvests using fishing nets that even catch juveniles is another major challenge. This usually happens when fishers do not follow the rules and regulations on fishing. Even if people know the existence of the rules, sometimes the economic incentive may urge them to override the rules in the absence of law enforcement officers from the fisheries department. That is why if such connected land and water bodies are put under the authority of local communities, it may be easier to enforce the existing rules, as any unsustainable practice affects the community eventually. That is why the co-management approach to land-seascape sustainability is crucial.

4.2.3 Addressing sustainable land management challenges

Irrespective of the location of the study communities, even in Tanbi, communities still practice some form of crop farming whether it is rice or other annual crops. The concern is poor land management practices and intensive use of the available land. As a result, most farmland is degraded and is not productive enough. The ambition of the communities is to adopt shifting cultivation practices, but the major bottleneck is how to ensure there is food on the table if they leave the land fallow for one cropping season. An alternative would be to adopt land management practices such as agroforestry where the soil potential is gradually replenished through fertilizer trees that fix nitrogen from the atmosphere. Some agroforestry species could also be fruit trees that could cushion the households against income losses during fallow years. Such trees could also be a means of building resilience in such coastal areas where climate change-related risks are growing with time. Conservation agriculture is another option which the community needs to be sensitized on. Rather than burning agricultural residues, conservation agriculture practices could enrich the soil and increase the organic matter content.

4.3 The enablers needed to implement the land-seascape vision

Addressing the above pertinent challenges requires support systems beyond what government agencies conventionally provide. The communities' vision of land-seascapes with good vegetation cover, productive farming systems, and sustainably managed shellfishery and fishery utilization systems needs strong extension support as many of these locations do not have dedicated extension services from the relevant ministries such as ministries and departments of environment, agriculture, fisheries, and forestry. It is a way to help communities to practically introduce the measures they think and believe can address the major ecosystem level challenges they are experiencing. However, the extension service structure needs to be built on an understanding of the community needs and designing effective communication and locally relevant support pathways.

Besides revitalized extension support schemes, there is also a need to support communities by linking them with the market. Often the products of the labor of producers and other value chain actors,

either from farming, livestock, or oyster harvesting do not generate the rewards they could get. This is because there is a very weak value addition effort and support. Middlepersons are often able to collect the products at lower prices from the communities and retain much of the benefit at their level. If properly organized, land-seascapes like Tanbi can be a great opportunity to link the oyster harvesting communities with the consumers in Banjul or even abroad. Institutions like TRY Oyster Women's Association and other stakeholders could continue to build on the shellfishery co-management frameworks (e.g., Ministry of Fisheries, Water Resources and National Assembly Matters, 2012)[2] in place to facilitate such schemes. The incentive potential of such rewards generated through market linkages may compel communities to conserve mangroves that the oyster production relies on. The land-seascape in Bulock site, which also has the Bintang community forest and the Berefet community conservation area[3] (985 ha), present another opportunity of linking oyster farming, mangrove management and landscapes where land-based activities such as agriculture take place.

The aspiration of the communities cannot happen if coalitions of actors and stakeholders do not come together to support what communities are calling for. In many countries, such multi-stakeholder coalitions guided by the visions owned by communities have resulted in successful ecosystem restoration. For instance, in Tanzania (Eilola, 2021; Duguma, et al., 2021; Duguma et al., 2014), in Niger (Haglund 2011), in Ethiopia (Brown et al., 2011; Murugan et al., 2017), and others have reported the value of these approaches for improved resource management. Such coalitions are crucial for community driven activities as local communities lack the resources and the capacity to drive such transformative changes at a landscape scale and the other actors involved could bring in the missing resources and skills. However, the engagement of the different stakeholders and actors should be guided by sets of rules and regulations that could be enforced upon need. It is important to note that in such community-driven processes, there could be free-riders who want to benefit at the expense of others, thus incentive and disincentive packages should be designed carefully to reward positive intentions and efforts and punish destructive behaviors. The problem of the free-riders is why it is important to have incentives and disincentive schemes in place, as Wainaina et al. (2021) argued using the case of a Tanzania community-driven restoration scheme.

[2] The referred co-management plan for Tanbi was developed through the support of the Ba Nafaa project (Gambia-Senegal Sustainable Fisheries Program) funded by USAID and implemented under the agreement with University of Rhode Island.

[3] Community conservation areas are legally instituted wildlife conservation scheme in which an area is designated by communities for wildlife conservation. The communities benefit from the area in the form of non-wood products and tourist related incomes. They are managed by the respective communities signing agreement with the government. The supervising authority is the Department of Parks and Wildlife.

5. SUMMARY

The participatory landscape visioning tool was employed to engage coastal communities in focus group discussions to appraise resource and livelihood trends with respect to change trajectories over the past decade to the present as well as prospects for future remediation of any deteriorating conditions. Participants were enthusiastic in responding to questions discussed. From responses, it is notable that the main livelihood activities across the sites and communities were shellfishing and farming. Supplementary livelihood options such as trading and casual jobs were mentioned in some communities, but their scale of practice was low. This situation would invariably lead to further worsening of the already existing over-dependence on these natural resources and thus increase the vulnerabilities of inhabitants. The respondents identified some activities they wish to stop/eliminate, expand, or introduce. The activities to be stopped or replaced are those with negative consequences on environmental sustainability, resource availability, and, by extension, livelihoods, including deforestation and activities that cause over-exploitation of biodiversity. Alternatively, activities to expand or introduce are those that have positive impacts on communities and their livelihoods, including planting of mangrove forests, expansion of shell fishing, and restoration of ecosystems. Various stakeholders were identified in the three sites, which were categorized as private, government and its agencies, and community groups with different and complementary roles. The indicators of healthy mangroves mentioned by respondents include the appearance of mangrove plants, particularly the leaf color and stem forms, extent of recruitment of juvenile mangroves, and shellfish productivity.

To date, most of the landscape and seascape-based livelihood and conservation activities were undertaken as separate parts. However, whatever happens in the landscapes has an influence on what happens in the seascape and vice versa. Thus, it is timely to think of the land-seascape as one system and plan for its management as such. For instance, The Gambia has community forestry scheme, community managed shellfishing (e.g., in Tanbi), community conservation areas (community protected areas) and farmland agrobiodiversity (e.g., agroforestry) happening at different parts of the land-seascape. These models have not been connected in an integrated approach in one estuarine land-seascape. Currently, no example exists in The Gambia of an area that has a shellfish harvesting plan and use rights coupled to mangrove community-based management or to proximate landscape management. We believe a land-seascape approach deserves consideration, perhaps in a pilot scheme, which would serve as a potentially successful and highly tailored small-scale ecosystem approach for estuaries, associated mangroves, shellfisheries and their proximate landscapes. Such tailored land-seascape ecosystem-based approach for interlinking estuarine-mangrove-shellfishery-proximate agroforestry socio-ecological systems could be promising as it can contribute to biodiversity conservation, natural resources management, and food security goals in The Gambia and the wider West Africa's coastal region.

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